

REMARKS

Summary

This Amendment is responsive to the Office Action mailed on February 23, 2005. Claims 1-71 are pending. Claims 1, 2, 11 and 36 are amended herein.

Claims 1-6, 8, 9, 12, 18-24, 30, 36-41, 43, 44, 47, 52-59, and 65 are rejected under 35 U.S.C. § 102(b) as being anticipated by Fujita (US 5,315,523).

Claims 7 and 42 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Fujita in view of Frey (US 5,691,909).

Claims 10, 11, 25-29, 31-35, 45, 46, 60-64, and 66-71 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Fujita in view of Schwenke (US 6,553,268).

Claims 13-17 and 48-51 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Fujita in view of Kuni (US 5,586,224).

Applicants respectfully traverse these rejections in view of the amended claims and the following comments.

Discussion of Amended Claims

Independent claims 1 and 36 are amended to specify at least two virtual operating units, and to clarify that each virtual operating unit corresponds to an operating unit of the machine tool. Independent claim 1 is also reworded to more clearly specify the claimed invention.

Claim 2 is amended to conform to amended claim 1. Claim 11 is amended to depend from claim 10 in order to provide proper antecedent basis for "data tree structure."

Discussion of Fujita

Claims 1-6, 8, 9, 12, 18-24, 30, 36-41, 43, 44, 47, 52-59, and 65 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Fujita. This rejection is respectfully traversed. An anticipation rejection requires that each and every element of the claimed invention as set forth in the claim be provided in the cited reference. See *Akamai Technologies Inc. v. Cable & Wireless Internet Services Inc.*, 68 USPQ2d 1186 (CA FC 2003), and cases cited therein. As discussed in

detail below, Fujita does not meet the requirements for an anticipation rejection.

Fujita discloses a numerical control apparatus having a work simulation function for enabling both the workpiece and the tool movement to be displayed at any time on the same display screen during a work simulation (Col. 1, lines 43-50).

Fujita discloses only visualization of the workpiece clamping means (chuck) 41, the workpiece 42, and a single tool 43 (Fujita, Fig. 4 and Col. 5, lines 59-62). In contrast, the virtual operating units of the present invention correspond to an actual operating unit of the machine tool.

For example, as discussed in Applicants' specification, operating units of a machine tool can comprise tool carriers, drilling devices, punching slides and workpiece receiving means, each having at least one axis of rotation (See, e.g., Applicants' specification, page 1, third para). Therefore, for example, virtual turrets REV1, REV2, and REV3 and workpiece spindle W may each comprise individual virtual operating units of the virtual machine tool (page 29, lines 13-17; Figure 4).

With Applicant's claimed invention, the user is presented with a visualization of a virtual workpiece and at least two virtual operating units. The user is able to specify virtual actions for the virtual operating units. The user can then look at the movement of an entire operating unit with respect to at least one other operating unit and the workpiece. Since the entire virtual operating unit is visualized (not just the tool held in the tool carrier), the size and shape of the corresponding machine unit is provided on the display. This feature provides several advantages over the system disclosed in Fujita. In the Fujita system, the user sees only the tool interaction with the workpiece. However, in Fujita, there is no visualization of the operating unit holding the tool (i.e., a virtual operating unit) and at least one other virtual operating unit on the machine tool. Accordingly, with Fujita's system, the user is not presented with a visualization for determining interaction of multiple operating units, such as the interaction of a turret and a tool carrier with another turret and tool carrier and/or the workpiece. Therefore, during complex machining operations involving multiple operating units, a user of the Fujita system cannot determine whether one turret or tool carrier will collide with another turret or tool carrier during

specific movements, as can be ascertained with Applicants' claimed invention.

The differences between Applicants' claimed invention and that of Fujita are apparent when comparing Figures 3 and 4 of Fujita with, for example, Applicants' Figure 4. In Figures 3 and 4 of Fujita, only visualizations of the workpiece chuck 41, the workpiece 42 and the tool 43 are provided (Col. 5, lines 59-62). In Applicants' Figure 4, the model visualization unit generates a machine display 40 with visualizations of a workpiece spindle W, a workpiece 42, and turrets REV1, REV2, and REV3 for machining of the workpiece 42 with tools WZ (See, e.g., Applicants' specification, page 29, second para.).

The present invention is directed at programming specific machining operations using visualization of those operations in order to avoid collisions of various operating units of the machine tool during complex machining operations (see, e.g., Applicants' specification, page 3, last para. through page 4, last para.). In programming such complex machining operations involving more than one operating unit, it is not sufficient to visualize just the workpiece, the workpiece clamping means, and one tool as is provided for in Fujita, as such a system does not provide any indication regarding how the tool carrier or the turret carrying the tool moves with respect to any of the other operating units on the machine tool.

Applicants respectfully submit that Fujita does not disclose or remotely suggest providing a machine display for presenting a visualization of a virtual workpiece and at least two virtual operating units to a user, where each of the virtual operating units corresponds to an operating unit of said machine tool, addressing at least one of the virtual operating units by the user to specify virtual action(s) for the at least one virtual operating unit via a data input unit, and converting the action(s) specified to the at least one virtual operating unit into sets of control data of the control program by the data processing unit, taking into account a machine configuration and control configuration specified to the machine tool.

As Fujita does not disclose each and every element of the invention as claimed, the rejections under 35 U.S.C. § 102(b) are believed to be improper, and withdrawal of the rejections is respectfully requested. See, *Akamai Technologies Inc., supra*.

Applicants respectfully submit that the present invention is not anticipated by and would not have been obvious to one skilled in the art in view of Fujita, taken alone or in combination with any of the other prior art of record.

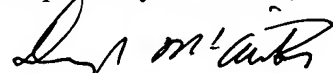
Further remarks regarding the asserted relationship between Applicant's claims and the prior art are not deemed necessary, in view of the amended claims and the foregoing discussion. Applicants' silence as to any of the Examiner's comments is not indicative of an acquiescence to the stated grounds of rejection.

Withdrawal of the rejections under 35 U.S.C. § 102(b) and 35 U.S.C § 103(a) is therefore respectfully requested.

Conclusion

The Examiner is respectfully requested to reconsider this application, allow each of the pending claims and to pass this application on to an early issue. If there are any remaining issues that need to be addressed in order to place this application into condition for allowance, the Examiner is requested to telephone Applicants' undersigned attorney.

Respectfully submitted,



Douglas M. McAllister
Attorney for Applicant(s)
Registration No.: 37,886
Lipsitz & McAllister, LLC
755 Main Street
Monroe, CT 06468
(203) 459-0200

ATTORNEY DOCKET NO.: HOE-466.1

Date: July 13, 2005